REMARKS

The Invention

The invention features a method of culturing a cell, for example, an oocyte or an embryo, *in vitro* using a hypertonic medium.

The Office Action

Claims 1-13 are pending. Claim 13 stands rejected under 35 U.S.C. § 102(b). Claims 1-13 stand rejected under 35 U.S.C. § 103. Claims 1-5 stand rejected under the judicially created doctrine of obviousness type double patenting over claims 31-32 of U.S. Patent No. 6,673,607. Each of these rejections is addressed in detail below.

Support for New Claims

Applicants have added claims 14 to 31. Support for these claims is found throughout the specification, for example, at page 21, line 4 to page 22, line 21.

Rejection of claim 13 under 35 U.S.C. § 102(b)

Claim 13 stands rejected under 35 U.S.C. § 102(b) for anticipation by Rupp et al. (U.S.P.N. 4,724,206) or Gullans et al. (5,182,299). Claim 13 has been cancelled rendering this rejection moot.

Rejection of claims 1-13 under 35 U.S.C. § 103

Claims 1-13 stand rejected under 35 U.S.C. § 103 for obviousness over Rupp in view of Gullans. According to the Examiner it would have been obvious to combine Rupp's teaching of improved methods of protein production by culturing cells in a hypertonic medium with Gullans' teaching of culturing a rat glioma cell line in a hypertonic medium to arrive at the present invention. This rejection is respectfully traversed.

Of the rejected claims still pending after the present amendment, claims 1 and 6 are independent claims. Claim 1 and its dependent claims feature a method of culturing an oocyte *in vitro* that includes incubating the oocyte in a hypertonic medium having an osmolarity greater than 300 mosm. Claim 6 and its dependent claims feature a method of culturing an embryo *in vitro* that includes incubating the embryo in a hypertonic medium having an osmolarity greater than 300 mosm. Claims 8-9 and 11-13 have been cancelled by the present amendment. Applicants note, for the record, that the current claim amendments were made solely for the purpose of expediting prosecution. Applicants reserve the right to pursue all canceled subject matter in this or future related applications.

According to MPEP 2143.03, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Neither Rupp nor Gullans, alone or combined, teaches or suggests any method related to the culturing of oocytes or embryos

in vitro; therefore, Rupp and Gullans fail to teach or suggest all the claim limitations of claims 1-7 and 10.

Rupp makes no mention of oocytes or embryos, let alone methods of culturing oocytes or embryos. Rupp describes methods of improving protein production, especially antibody production, in cells, such as hybridoma, myeloma, and continuous protein-producing cells, by culturing the cells in a medium having an osmolarity of at least 340 mosm. Rupp does not describe any methods for culturing an oocyte or an embryo *in vitro* in a hypertonic medium, nor does Rupp suggest in any way that the disclosed methods have any applicability to oocytes or embryos. In the absence of any mention of oocytes and embryos, Rupp cannot teach or suggest all the claim limitations of claims 1-7 and 10.

Gullans does not remedy this deficiency because, like Rupp, Gullans does not mention oocytes or embryos or methods of culturing either one. Gullans describes methods of treating or preventing osmotic disturbances *in an animal* that include administering to the animal an effective concentration of an organic osmolyte compound. Example V is the only mention in all of Gullans of *in vitro* culture conditions. In this Example, Gullans describes the culture of transformed rat C6 glioma cells in a medium having an osmolarity of 440 mosm as a model of brain osmoregulation. Gullans does not mention oocytes or embryos in the description of *in vitro* culture methods; therefore Gullans also fails to teach or suggest all of the claim limitations of claims 1-7 and 10.

In addition, even if combined, Rupp and Gullans would not render claims 1-7 and

10 obvious because neither one of them mentions culturing oocytes or embryos *in vitro* in a hypertonic medium having an osmolarity greater than 300 mosm.

The Examiner submits that given Rupp's suggestion of the generic applicability of the method and the fact that Gullans also teaches culturing a different type and species of cell in a hypertonic medium (440 mosm), it would have been obvious to culture essentially any cell in a medium with an osmolartiy greater than about 300 mosm. Applicants respectfully disagree with this suggestion on the basis that neither Rupp nor Gullans teaches or suggests that the method is applicable to all cell types and, furthermore, oocytes and embryos are distinct cell types with unique characteristics. For example, mature oocytes are haploid cells that have a very delicate membrane, which is sensitive to the surrounding conditions. Oocytes are also the largest cells in the human body. Oocytes do not grow and mature on their own *in vivo*; instead, they are nourished by surrounding granulosa cells. Oocytes use pyruvate for their energy source as opposed to glucose, which is used by other mammalian cells. Similarly, embryos differ from somatic cells in a number of ways. Embryos consist of a group of cells that have the potential to develop into a complete organism and are generally include cells from fertilization through the early stages of development. The metabolic needs and environmental requirements for growth and development of the embryo are distinct from those of a somatic cell line, let alone a genetically modified or transformed cell culture line as described by Rupp and Gullans. As a result, even if Applicants stipulated, for the

sake of argument that Rupp did suggest the general applicability of the disclosed culture methods, Applicants submit that the unique physiology and metabolic needs of oocytes and embryos, distinguishes them and their culture requirements from somatic cells or cell culture lines.

As described above, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. Rupp and Gullans do not teach or suggest all the limitations of claims 1-7 and 10 and, in the absence of such a teaching, cannot render the claims obvious. Applicants respectfully request that this rejection be withdrawn.

Rejection of Claims 1-5 for Obviousness-Type Double Patenting

Claims 1-5 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 31-32 of U.S. Patent No. 6,673,607. The Examiner states that the conflicting claims are not patentably distinct because the patent claims a method wherein one of the steps is identical to the claimed invention. Applicants respectfully disagree.

Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter *is not patentably distinct* from the subject matter claimed in a commonly owned patent when the issuance of a second patent would provide unjustified extension of the term of the right to exclude granted by a patent. See *Eli Lilly & Co. v.*

Barr Labs., Inc., 251 F.3d 955, 58 USPQ2d 1865 (Fed. Cir. 2001); *Ex parte Davis*, 56 USPQ2d 1434, 1435-36 (Bd. Pat. App. & Inter. 2000).

Applicants respectfully submit that the claimed subject matter of the present application is patentably distinct from claims 31 and 32 of U.S. Patent No. 6,673,607. This is supported by the fact that a restriction requirement was issued during the prosecution of U.S.S.N. 09/859,105 (the application corresponding to the issued patent).

The third sentence of 35 U.S.C. § 121 prohibits the use of a patent issuing on an application with respect to which a requirement for restriction has been made, or on an application filed as a result of such a requirement, as a reference against any divisional application, if the divisional application is filed before the issuance of the patent.

The facts of the present case, as detailed below, clearly fall within the scope of this provision of 35 U.S.C. § 121; therefore, the claimed subject matter of claims 1-5 are patentably distinct from claims 31-32 of U.S.P.N. 6,673,607 and this rejection should be withdrawn.

The present application is a continuation-in-part application of U.S.P.N. 6,673,607, which was filed as U.S.S.N. 09/859,105 (hereafter referred to as "the '105 application") on May 16, 2001. In the '105 application, the Examiner issued a Restriction Requirement on April 22, 2003 designating two groups, Group I (claims 1-33 and 39-42), drawn to a method of preserving cells and Group II (claims 34-38), drawn to a method of

culturing cells. In response, Applicants elected Group I, which included claims 31 and 32.

Independent claim 1 of the present application is directed to a method of culturing an oocyte *in vitro* by incubating the oocyte in a hypertonic medium having an osmolarity greater than 300 mosm. This claim is identical to claim 34 from Group II of the '105 application. Claim 2, which depends from claim 1, is identical to claim 5 from Group II of the '105 application. Claims 3-5, which also depend from claim 1, further limit the osmolarity of the hypertonic medium.

In describing Groups I and II in the Restriction Requirement sent on April 22, 2003 in the '105 application, the Examiner states, "the different inventions involve two patentably distinct methods, one a method of preserving cells in a dormant state and the other a method of growing cells at a high osmolarity."

As clearly acknowledged by the Examiner in this case, claims 1-5 which are identical to claims from group II of the '105 application are patentably distinct from the claims of U.S.P.N. 6,673,607. Accordingly, this double patenting rejection should be withdrawn.

CONCLUSION

Applicants submit that the claims are now in condition for allowance and such action is respectfully requested.

Enclosed is a check for $150 in payment of the excess claims fee. If there are any additional charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date: June 30, 2005

Paul T. Clark
Reg. No. 30,162

Susan M. Michaud
Reg. No. 42,885

Clark & Elbing LLP
101 Federal Street
Boston, MA 02110
Telephone: 617-428-0200
Facsimile: 617-428-7045